## CLAIMS

What is claimed is:

1. A method for transmitting over a high-throughput communication channel comprising:

transmitting a high-throughput packet with a time offset between some portions of the packet transmitted on a first subchannel and some portions of the packet transmitted on a second subchannel, the time offset to convey additional signaling information.

2. The method of claim 1 wherein transmitting comprises:

transmitting first portions of the high-throughput packet on the first subchannel of the high-throughput channel;

transmitting second portions of the high-throughput packet on the second subchannel of the high-throughput channel, wherein the second portions are transmitted with the time offset with respect to the transmitting of the first portions; and

transmitting third portions on both the first and second subchannels without the time offset therebetween, the time offset to convey at least one bit of additional signaling information to a high-throughput receiving station by detection of the time offset.

3. The method of claim 2 wherein the first portions of the high-throughput packet are substantially identical to corresponding ones of the second portions of the high-throughput packet,

wherein the first portions comprise first training fields and a first signaling field, and

wherein the second portions comprise second training fields and a second signaling field.

4. The method of claim 3 wherein the first training fields and second training fields each comprise a training sequence of predetermined training values, and

wherein the third portions comprise a high-throughput data field to convey high-throughput data.

5. The method of claim 1 further comprising conveying a single bit of signaling information to a receiving station by transmitting the high-throughput packet with the time offset having a duration exceeding a first predetermined value.

6. The method of claim 1 further comprising conveying two-bits of signaling information to a receiving station by transmitting the high-throughput packet with the time offset having a duration that varies between a first and a second predetermined value, the second and a third predetermined value, or the third and a fourth predetermined value.

7. The method of claim 2 wherein the high-throughput channel comprises two frequency separated subchannels, the time offset being between corresponding fields of the two subchannels,

wherein the subchannels are orthogonal frequency division multiplexed channels.

8. The method of claim 7 wherein each subchannel comprises a plurality of orthogonal frequency division multiplexed subcarriers, and

wherein each orthogonal frequency division multiplexed subcarrier has a null at substantially a center frequency of the other subcarriers to achieve substantial orthogonality between the subcarriers of the associated subchannel.

9. The method of claim 1 wherein the high-throughput packet comprises training fields comprising training sequences, a signaling field comprising signaling information, and a high-throughput data field,

wherein the training sequences and the signaling information are transmitted on the more than one subchannel comprising the high-throughput channel,

wherein the signaling information comprises format, rate and length information for the high-throughput data field,

wherein the high-throughput data field has differing data portions transmitted on the more than one subchannel comprising the high-throughput channel.

10. The method of claim 9 wherein a non-high-throughput communication station enters a receiving state in response to determining the length information from the signaling field, the non-high-throughput communication station refraining from transmitting during the high-throughput data field.

11. The method of claim 1 further comprising transmitting high-throughput data fields of the high-throughput packet on the first and second subchannels without the time offset between.

12. The method of claim 11 further comprising transmitting additional data portions on subcarriers in between the first and second subchannels of the high-throughput channel,

wherein the additional data portions are transmitted substantially synchronously with the high-throughput data fields.

13. The method of claim 1 wherein the time offset is provided between symbol boundaries of portions of the high-throughput packet transmitted on the first subchannel and corresponding portions of the high-throughput packet transmitted on the second subchannel.

14. The method of claim 1 wherein the transmitting is performed by a first communication station transmitting a first high-throughput packet with a

first time offset between some portions on the first subchannel and some portions of the packet on the second subchannel,

wherein the time offset is to convey first additional signaling information to a second communication station, and

wherein the method further comprises receiving a second high-throughput packet from the second communication station with a second time offset between some portions on the first subchannel and some portions of the second packet on the second subchannel, and

wherein the second time offset is to convey second additional signaling information to the first communication station.

15. A method for receiving comprising:

receiving a high-throughput packet with a time offset between some portions of the packet on a first subchannel and some portions of the packet on a second subchannel, the time offset conveying additional signaling information.

16. The method of claim 15 wherein receiving comprises:

receiving first portions of the high-throughput packet on the first subchannel of a high-throughput channel;

receiving second portions of the high-throughput packet on the second subchannel of the high-throughput channel, wherein the second portions are received with the time offset with respect to the receiving of the first portions; and

receiving third portions of the high-throughput packet on both the first and second subchannels without the time offset therebetween, the time offset conveying at least one bit of additional signaling information to a high-throughput receiving station by detection of the time offset.

17. The method of claim 16 wherein the first portions of the high-throughput packet are substantially identical to corresponding ones of the second portions of the high-throughput packet,

wherein the first portions comprise first training fields and a first signaling field,

wherein the second portions comprise second training fields and a second signaling field.

18. The method of claim 15 further comprising determining a duration of the time offset to receive two-bits of signaling information, wherein the time offset has a duration between a first and a second predetermined value, a duration between the second and a third predetermined value, or a duration between the third and a fourth predetermined value.

19. The method of claim 15 wherein the high-throughput packet comprises training fields comprising training sequences, a signaling field comprising signaling information, and a high-throughput data field,

wherein the training sequences and the signaling information are received on the more than one subchannel comprising the high-throughput channel,

wherein the signaling information comprises format, rate and length information for the high-throughput data field,

wherein the high-throughput data field has differing data portions to be received on the more than one subchannel comprising the high-throughput channel.

20. The method of claim 15 further comprising:

receiving high-throughput data fields of the high-throughput packet on the first and second subchannels without the time offset between; and

receiving additional data portions on subcarriers in between the first and second subchannels of the high-throughput channel, wherein the data portions are received substantially with the high-throughput data fields.

21. A communication station comprising:

a transmitter to transmit a high-throughput packet with a time offset between some portions of the packet on a first subchannel and some portions of the packet on a second subchannel; and

processing circuitry to instruct the transmitter to transmit the high-throughput packet with the time offset between the some portions, wherein the time offset is to convey additional signaling information to another communication station.

22. The communication station of claim 21 wherein the communication station is a first communication station, the another communication station is a second communication station, the high-throughput packet is a first high-throughput packet, and the time offset is a first time offset,

wherein the first communication station further comprises a receiver to receive a second high-throughput packet from the second communication station with a second time offset between some portions of the second packet on the first subchannel and some portions of the second packet on the second subchannel, the second time offset to convey additional signaling information to the first communication station, and

wherein the processing circuitry is to identify the second time offset.

23. The communication station of claim 21 wherein the transmitter transmits first portions of the high-throughput packet on the first subchannel of a high-throughput channel,

wherein the transmitter transmits second portions of the high-throughput packet on the second subchannel of the high-throughput channel, wherein the second portions are transmitted with the time offset with respect to the transmitting of the first portions,

wherein the transmitter transmits third portions on both the first and second subchannels without the time offset therebetween, and

the processing circuitry conveys at least one bit of additional signaling information to a high-throughput receiving station by the time offset.

24. The communication station of claim 23 wherein the first portions of the high-throughput packet are substantially identical to corresponding ones of the second portions of the high-throughput packet,

wherein the first portions comprise first training fields and a first signaling field,

wherein the second portions comprise second training fields and a second signaling field, and

wherein the third portions comprise a high-throughput data field to convey high-throughput data.

25. The communication station of claim 21 wherein the processing circuitry conveys two-bits of signaling information to the other station by instructing the transmitter to transmit the high-throughput packet with the time offset having a duration that varies between a first and a second predetermined value, between the second and a third predetermined value, or between the third and a fourth predetermined value.

26. The communication station of claim 24 wherein the high-throughput channel comprises two frequency separated subchannels, the time offset being between corresponding fields of the subchannels,

wherein the subchannels are orthogonal frequency division multiplexed channels,

wherein each subchannel comprises a plurality of orthogonal frequency division multiplexed subcarriers, and

wherein each orthogonal frequency division multiplexed subcarrier has a null at substantially a center frequency of the other subcarriers to achieve substantial orthogonality between the subcarriers of the associated subchannel.

27. A communication station comprising:

a receiver to receive a high-throughput packet with a time offset between some portions of the packet received on a first subchannel and some portions of the packet received on a second subchannel; and

processing circuitry to determine the time offset between portions on the first subchannel and the portions on the second subchannel, the time offset to convey additional signaling information to the communication station.

28. The communication station of claim 27 wherein the communication station is a first communication station which receives the high-throughput packet from a second communication station, and wherein the high-throughput packet is a first high-throughput packet, and the time offset is a first time offset,

wherein the first communication station further comprises a transmitter to transmit a second high-throughput packet with a second time offset between some portions of the second packet on the first subchannel and some portions of the second packet on the second subchannel, the second time offset to convey additional signaling information to the second communication station, and

wherein the processing circuitry is to select the second time offset.

29. The communication station of claim 27 wherein the receiver receives first portions of the high-throughput packet on the first subchannel of a high-throughput channel,

wherein the receiver receives second portions of the high-throughput packet on the second subchannel of the high-throughput channel, wherein the second portions are received with the time offset with respect to the receiving of the first portions,

wherein the receiver receives third portions of the high-throughput packet on both the first and second subchannels without the time offset therebetween, and

the processing circuitry determines at least one bit of additional signaling information by the time offset.

30. The communication station of claim 29 wherein the first portions of the high-throughput packet are substantially identical to corresponding ones of the second portions of the high-throughput packet,

wherein the first portions comprise first training fields and a first signaling field,

wherein the second portions comprise second training fields and a second signaling field, and

wherein the third portions comprise a high-throughput data field to convey high-throughput data.

31. The communication station of claim 27 wherein the processing circuitry determines two-bits of signaling information conveyed by other station by determining whether the time offset has a duration between a first and a second predetermined value, has the duration between the second and a third predetermined value, or has the duration between the third and a fourth predetermined value.

32. The communication station of claim 30 wherein the high-throughput channel comprises two frequency separated subchannels, the time offset being between corresponding fields the subchannels,

wherein the subchannels are orthogonal frequency division multiplexed channels,

wherein each subchannel comprises a plurality of orthogonal frequency division multiplexed subcarriers, and

wherein each orthogonal frequency division multiplexed subcarrier has a null at substantially a center frequency of the other subcarriers to achieve substantial orthogonality between the subcarriers of the associated subchannel.

33. A system comprising:

a substantially omnidirectional antenna;

a transmitter to transmit a high-throughput packet using the antenna, the packet having with a time offset between some portions of the packet transmitted on a first subchannel and some portions of the packet transmitted on a second subchannel; and

processing circuitry to instruct the transmitter to transmit the high-throughput packet with the time offset between the portions, wherein the time offset is to convey additional signaling information to another communication station.

34. The system of claim 33 wherein the high-throughput packet is a first high-throughput packet and the time offset is a first time offset,

wherein the system further comprises:

a receiver to receive a second high-throughput packet from the other communication station with a second time offset between some portions on the first subchannel and some portions of the second packet on the second subchannel, the second time offset conveying additional signaling information, and

wherein the processing circuitry is to identify the second time offset.

35. The system of claim 33 wherein the transmitter transmits first portions of the high-throughput packet on the first subchannel of a high-throughput channel,

wherein the transmitter transmits second portions of the high-throughput packet on the second subchannel of the high-throughput channel, wherein the second portions are transmitted with the time offset with respect to the transmitting of the first portions,

wherein the transmitter transmits third portions of the high-throughput packet on both the first and second subchannels without the time offset therebetween, and

the processing circuitry conveys at least one bit of additional signaling information to a high-throughput receiving station by the time offset.

36. A machine-readable medium that provides instructions, which when executed by one or more processors, cause the processors to perform operations comprising:

transmitting a high-throughput packet with a time offset between some portions of the packet transmitted on a first subchannel and some portions of the packet transmitted on a second subchannel, the time offset to convey additional signaling information.

37. The machine-readable medium of claim 36 wherein the instructions, when further executed by one or more of the processors cause the processors to perform additional operations,

wherein the transmitting is performed by a first communication station transmitting a first high-throughput packet with a first time offset between some portions on a first subchannel and some portions of the packet on a second subchannel, the first time offset conveying first additional signaling information to a second communication station, and

wherein the operations further comprise:

receiving a second high-throughput packet from the second communication station with a second time offset between some portions on the first subchannel and some portions of the second packet on the second subchannel, the second time offset conveying second additional signaling information to the first communication station.

38. The machine-readable medium of claim 36 wherein the instructions, when further executed by one or more of the processors cause the processors to perform operations further comprising:

transmitting first portions of the high-throughput packet on the first subchannel of a high-throughput channel;

transmitting second portions of the high-throughput packet on the second subchannel of the high-throughput channel, wherein the second portions are transmitted with the time offset with respect to the transmitting of the first portions; and

transmitting third portions of the high-throughput packet on both the first and second subchannels without the time offset therebetween, the time offset conveying at least one bit of additional signaling information to a high-throughput receiving station by detection of the time offset.